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ABSTRACT

In order to determine adequately how community and technical colleges can work with business and industry to meet the training needs of the existing work force, one must first understand the relationship between lagging productivity and the national economy. In the short run, lagging productivity increases inflation and unemployment, lessens our standard of living, and confounds our ability to compete successfully in world markets. Long-term effects include social and political unrest, reduced national defense capabilities, snowballing economic problems, and worsened problems in competing in world markets. Investment in human capital and high technology in the form of improved vocational education and occupational training will result in a healthier economy. Vocational educators can and must work cooperatively with business and industry to improve human productivity and quality of work life through new management practices. Among those areas of human resource development in which possibilities for partnerships among business, industry and vocational education exist are the following: training for job redesign, employee orientation training, technical and scientific skill development, communications and basic skill development, supervisor orientation training, and training for employee participation. (Appended to the report are lists of resource persons, conferences, and references.) (MN)

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SPECIAL PUBLICATION SERIES No. 36

# If Productivity Is the Problem. . .

*by*
Kenneth F. Huddleston
National Fellow, Advanced Study Center

U.S. DEPARTMENT OF EDUCATION
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The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

*Cooperating Partners*
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# Foreword

The challenges of lagging productivity and economic slowdown continue to plague our nation. Many believe that productivity and economic improvements of a substantial degree will require massive human capital investment. This concept paper will help the reader understand the important interrelationships among lagging productivity, economic slowdown, and human capital investment. The paper identifies what business and industry is doing to improve human productivity and the quality of work life. It examines what upgrading and retraining needs are developing for the existing work force and how postsecondary occupational education can collaborate more closely with the business/industry community in meeting those needs.

The National Center is pleased to present this concept paper by Dr. Kenneth F. Huddleston, who wrote it while serving as a National Fellow in the Advanced Study Center of the National Center for Research in Vocational Education. Dr. Huddleston was on leave from Fox Valley Technical Institute, Appleton, Wisconsin. This work (a synopsis of *The Efforts of Business to Improve Human Productivity and Quality of Work Life: Training Implications for Community and Technical Colleges* (ED 217 149), represents a unique effort that utilized the assistance of the following cooperating partners: the American Association of Community and Junior Colleges, the American Society for Training and Development, and the American Vocational Association. The final writing represents the opinions and conclusions of the author, and does not necessarily reflect those of the associations who served as cooperating partners, of the individuals who assisted with portions of the study, or of the National Center for Research in Vocational Education.

This paper would not have been possible without the assistance of a wide range of individuals, who consented to interviews, provided study tours of plants and schools, and offered counsel. Special appreciation is extended to Dr. Gene Bottoms, American Vocational Association; Robert Craig, American Society for Training and Development; and Dr. Richard Wilson, American Association of Community and Junior Colleges. Members of the National Committee and National Telephone Reactors (see Appendices A and B) and other resource persons (see Appendix C) provided timely and valuable insights.

Professional staff members of the National Center who provided continuous help were Drs. M. Catherine Ashmore, Arthur Lee, James Watkins, and Ms. Catharine Warmbrod. Additional valuable support was provided by Kathy Friend and Cindy Cheeley, typists, and by Connis Faddis, Sharon L. Fain, and Janet Kiplinger, editors.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

# Executive Summary

This concept paper is designed for community and technical college presidents, deans of instruction, practitioners, and other decision makers in postsecondary education. The paper has two broad goals. The first is to give you a rationale for closer cooperation between postsecondary occupational education and business and industry. The rationale is based on the dynamic interrelationships among our lagging national productivity, our economic slowdown, and human capital investment. This last element—the concept that improving human productivity, the national economy, and the quality of work life for Americans depends strongly on how much investment is made in developing human resources—is a major focus of the paper.

The second goal of the paper is to describe how you, as decision makers in community or technical colleges, can work more closely and effectively with business and industry to improve the development of these vital human resources. The paper clearly identifies the kinds of emerging training needs that you need to address—in cooperation with business and industry—to help develop the potential of the existing adult work force in this country. The paper will provide you with practical suggestions for strengthening your collaborative ties with business and industry.

Some of the specific questions addressed here include the following:

- What are the causes, scope, and challenges of lagging productivity? How does lagging productivity show itself in the national economy and the stability of the country? How does occupational education and training (human capital investment) help improve productivity and affect the stability of the economy and the nation? What are the relationships between the sluggish national economy and human capital investment (i.e., public occupational education and private sector training)? Why is it critical to understand these relationships? What does reindustrialization mean for you, especially concerning your college's involvement in retraining the existing work force?
- What is business and industry doing to meet the challenge of improving human productivity and the quality of work life?
- What new management practices are business and industry using to improve human productivity and the quality of work life, and how can postsecondary colleges assist in providing training to make the management practices work? What specific training do employees, supervisors, and lower level mid-management personnel need to implement and maintain the new management practices?
- How can you, as decision makers in postsecondary education, work cooperatively with business and industry to train or retrain personnel to use the new management practices? What administrative and content strategies will you need, and what barriers could make it difficult for you to implement the strategies at the local level? How can you overcome these barriers?

The paper will also explain why productivity is a major issue in every discussion about the national economy. One problem with productivity is that a lot more is said about it than seems actually to be *known* about it. There is growing evidence, however, that lagging productivity is one

of the roots of the national economic slowdown, manifested in high rates of inflation and unemployment, in our slipping standard of living, in our increased federal deficit, and in our reduced ability to compete in international markets. Continued lagging productivity has been called "the most basic sickness of the U.S. economy" (Skibbins 1981).

Many economists now agree that our economic slowdown will not be remedied simply by traditional monetary and fiscal controls. Instead, they believe that the foundation (or infrastructure) of America's economic system has weakened and needs to be shored up. They believe the country needs a new framework for economic understanding that will emphasize the importance of improving productivity in order to shore up that infrastructure and bring back economic stability.

What the economists are recommending always comes back to the need to improve both the human and technological capital of the private sector. The need for business and industry to invest in human beings as major resources is critical in this formula, and may ultimately prove more important to economic recovery than technological investments.

What becomes clear in all this is that community and technical colleges have vital roles in helping this country develop its human resources. If the United States is to embark on a massive program of human resource development—involving the retraining of tens of millions of working adults—the only existing system for delivering much of the needed training is that of the community and technical colleges. It will be essential for your college to establish closer collaboration with business and industry, in partnerships of a breadth and depth not yet envisioned. As decision makers in public occupational education, you will need to redefine your college's mission and rethink its strategies, especially in addressing training for work beyond initial job entry. You will need to create new administrative procedures and new content development strategies to support "fast response" training programs and to avoid expensive and frustrating "red tape." You will need to develop and maintain ongoing needs assessments with the business and industry sector in your area. Federal, state, and local governments will need to become enabling partners in this process.

One of the most critical elements of this process will be how clearly you, the decision makers of community and technical colleges, understand the training needs of working adults and of business and industry. Of particular importance will be how well you understand the new and emerging management practices that are being used by business and industry to improve productivity and the quality of work life. Two of the most popular of these management practices are job retraining and employee participation, and each requires training that could be partially or wholly delivered through a collaborative arrangement between business and industry, and community and technical colleges. We expect these kinds of management practices to touch the lives of a great number of workers, supervisors, and lower level mid-management personnel in the next ten years, and there is an enormous challenge in it for your college in helping to improve the productivity and quality of work life in America.

# Introduction

To "catch a new vision" is to look afar, to see anew, and to envision what has not yet been dreamt. Lagging productivity in U.S. business and industry has contributed to a reindustrialization of America, giving those of us involved in human resource development in both the public and private sectors the opportunity—and challenge—of "catching a new vision." We are being called on to envision what we must do to train, retrain, and upgrade the nation's existing adult work force, and we must look for ways to do this at higher technical levels and with shorter turnaround times than ever before imagined.

This concept paper is intended to help all of us in human resource development—especially decision makers and practitioners in community and technical colleges—get together with business and industry in new cooperative arrangements that can help speed the retraining of America's work force. The paper—intended as an aid to understanding and to practice—is the product of an intense year-long study conducted by the National Center for Research in Vocational Education, in cooperation with the American Association for Community and Junior Colleges (AACJC), the American Society for Training and Development (ASTD), and the American Vocational Association (AVA).

The first major section, "Why a New Direction for Occupational Education?," discusses a rationale for increased cooperation between the private sector and public postsecondary education in order to improve the nation's productivity and quality of work life. Woven into the discussion are the intrinsic issues of lagging productivity and its causes, the current economic slowdown and related economic theories and practices, and the need for this country to invest in human capital through retraining of the existing work force.

The second major section, "Partnership Possibilities in Human Resource Development," tackles the tough questions of what kinds of retraining and upgrading workers, supervisors, and lower level midmanagement personnel will need. It discusses how community and technical colleges must and can become the primary deliverers of these vital training services, and offers practical suggestions for making the essential partnerships with business and industry work.

# Why a New Direction for Occupational Education?

# Why a New Direction for Occupational Education?

### Catching a New Vision

The immediate temptation, when studying productivity from a human resource development perspective, is to identify the training needs of the existing work force in business and industry and then determine how community and technical colleges can work with business and industry (B/I) to meet those needs. But plunging right into a discussion of training without understanding the problems of lagging productivity is like trying to build a house on sand, that is, without a firm foundation—what we develop may not be what we need.

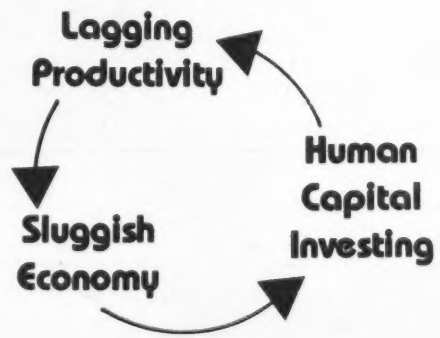
Our foundation should be built on solid answers to critical questions such as these:

- What are the causes, scope, and challenges of lagging productivity?
- How does lagging productivity show itself in the national economy and the stability of the nation?
- How can occupational education and training (i.e., human capital investment) improve productivity and the stabilization of our economic system?
- What are the relationships among lagging productivity, the sluggish national economy, and human capital investment?
- Why is it critical to understand these relationships?
- What does reindustrialization mean in terms of retraining the existing work force, and where do community and technical colleges fit into the picture?

We will try to ferret out some of the answers to these questions in order to understand the emergence of a more enduring mission and more comprehensive involvement of community and technical colleges with business and industry than would be possible without an appreciation of the factors involved in our national economic and training dilemmas.

Occupational education has historically been one of the systems called upon in this country to boost the nation's economic system. The 1917 Smith-Hughes Act, the 1936 George Dean Act, the 1946 George-Barden Act, and the economic effects of occupational education during World War II in moving the country from peacetime to wartime and back again, clearly show how important a role occupational education has had (Meyer 1977).

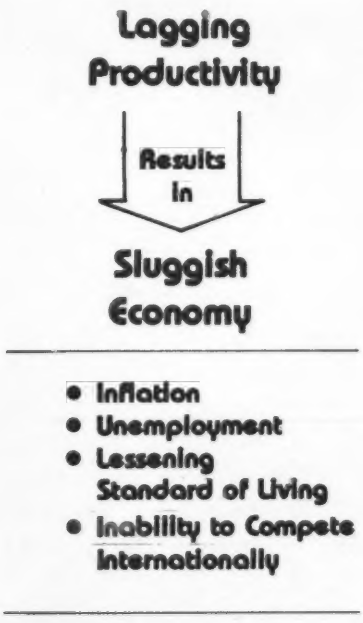
Though the economic rationale for occupational education continues today, many feel that social priorities (such as equity, access, and redistribution of resources) have dominated the past two decades. Meyer (1977) points out that the economic function of occupational education needs to become a priority again. It is time for us to reexamine the role of occupational training in the critical economic issues with us today, including trends related to the national income, production, employment, recession and depression, and recovery, boom, and inflation cycles (Bailey 1971). It is obvious that lagging productivity is contributing to our national economic problems. What we need to understand more clearly is how occupational education can help solve some of the productivity problems. To "catch a vision" of our role in the 1980s and 1990s, we need a thorough understanding of the dynamics of economics, productivity, and human resource development as they interrelate. From this understanding we should be able to see the key position occupied by occupational education. The future of occupational education lies with an expanded vision for economic recovery (Carnevale 1982). If productivity is the problem, occupational education—in the form of community and technical college collaboration with business and industry for retraining and upgrading the adult work force—is a big chunk of the answer.



One of our most important roles can be that of cornerstone to economic recovery through delivery of training services for business and industry. As the only established in-place delivery system (Hopkins 1982), we can emerge as a critical intervening force in improving U.S. productivity and worldwide economic competitiveness. We need to develop a meaningful knowledge of why we need to go in new directions, as well as where we must go and how we can get there. Once we have a solid understanding of the dynamics of our nation's economic problems and their relationship with training needs, we—as decision makers for community and technical colleges—can take leadership in establishing an expanded role for occupational education. But before we can gain this kind of understanding, we will need to become familiar with some sophisticated economics concepts and their inherent limitations (Thurow 1970). Without this awareness, we will fail to "catch the new vision" of the delivery system that we could help create, and which could be a potent factor in national economic recovery.

## Economic Problems and Lagging Productivity—A Key Interrelationship

Lagging productivity is one of the contributors to our country's current economic problems. In the short run, lagging productivity increases inflation and unemployment, lessens our standard of living, and confounds our ability to compete successfully in world markets. Long-term effects include social and political unrest, reduced national defense capabilities, snowballing economic problems, and worsened problems in competing in world markets. If the productivity problem continues, its effects could drastically affect the future of our nation. Already, it has touched the lives of most Americans.




### Social and Political Disruption

The social and political disruption that could result from continued lagging productivity is ominous. Sar Levitan (1981) suggested that if it is left to continue, we could experience "social confrontation" of staggering consequences. The gains of the poor and minorities in terms of educational access, improved standards of living, jobs, career mobility, and leisure could virtually be wiped out (Parrott 1981). High rates of unemployment and inflation, as well as environmental degradation and urban decay, are likely results (Skibbins 1981).

### National Defense

Lagging productivity and its weakening effects on the overall economic foundations of our nation have serious implications for the national defense. Simply stated, during difficult economic times, the monetary resources are not available to support national defense programs at necessary levels (McKee 1981).

Since the early 1970s, the slowdown in national productivity, combined with wage/benefit settlements in excess of productivity gains and with increased foreign competition in world markets, has contributed to a general weakening of our economic and political positions. During this period, monetary and fiscal efforts to resolve the problems have only aggravated them (Carnevale 1981b). The impact of lagging productivity on our economy and on our national security grows more serious each day.

### Inflation

Inflation, closely related to lagging productivity, affects nearly every segment of our society. The fact that drops in the nation's productivity cause a big chunk of inflation is not widely known (Freund and Manchester 1980), but according to Dr. C. Jackson Grayson, chairperson of the American Productivity Center, the impact is enormous (Waldman 1980).

During a period of low or zero gains in the productivity of the work force, for example, wage and benefit gains for the workers are paid for by companies' increasing the prices of the goods or services they produce. This increase in prices must be paid by the consumers, who are also the workers. Under

these conditions, wage gains contribute to an inflationary spiral because they are not based on gains in productivity. The standard of living of the workers does not make any real gain.

Percentage point drops in productivity have a multiplying effect on increasing inflation. For every 1 percent drop in annual productivity, we can expect a 2 to 4 percent increase in inflation over a four-year period. What basically causes this multiplication of effect is that wage increases during the first year are totally consumed by corresponding inflation in that year, so that in the next year the wages are negotiated at yet a higher rate. Each year, the previous year's inflation sets off new rounds of higher wage demands, whether or not productivity has brought in additional monies to cover the cost of the higher wages. And so the situation escalates.

### Standard of Living

Lagging productivity has brought a steady reduction in the standard of living for most Americans. The United States now ranks fifth in standards of living compared with other countries, a drop from the first place in 1972, when the productivity decline in our nation first became noticeable ("The Reindustrialization of Our Nation" 1980).

Glenn Watts, president of the Communications Workers of America, has expressed organized labor's concern over the country's poor productivity growth (Watts 1980). Organized labor has recognized that the well-being of workers stems, in the last analysis, from the nation's productivity. The growth in real wages tracks almost exactly with productivity growth in the United States. When productivity growth ran at 3 percent and above, annually, real wages were growing at 3 percent and above. In the last few years, when productivity was at the 0 percent or minus level, real wages also grew at the 0 percent or minus level. The only way for people to increase the real value of their paychecks is to improve productivity.

**Growth in real wages almost exactly follows the rate of growth in productivity.**

### Unemployment

Lagging productivity affects employment rates directly in two ways (Waldman 1980). First, lagging productivity in selected U.S. industries provides competing foreign countries with a competitive edge in world markets. That competitive edge often means a reduced market share for U.S. manufacturers, which in turn means layoffs, as recently witnessed in the steel, automobile, and rubber industries in the United States.

Second, lagging productivity causes excessive inflation—a relationship only recently recognized by economists and fiscal policymakers, who have been using traditional monetary and fiscal policies to restrain inflation. To reduce inflation by 1 percent, we must throw a million people out of work for three years, which adds over $25 billion to the national deficit (Carnevale 1981b).

Underemployment of U.S. workers is increasing because of lagging productivity. Our decline in international competitiveness has shifted leadership—and related highly skilled jobs—to world markets overseas. Remaining jobs in the United States, while plentiful at times, call for reduced skill levels. Since 1972, the United States has slipped from second to seventh in the percent of skilled workers in the work force (Drews 1981). Our exports steadily decline in the level of technical skill required for their manufacture, while our imports increase in technical skill required.

**Since 1972, the United States has slipped from second to seventh place in the percent of skilled workers in the work force.**

According to General Alton Slay, commander of the Air Force Systems Command, as our productivity growth rate declines, U.S. industry becomes less competitive and our world market share also declines. This weakens our dollar and further increases the costs of imports, including oil and nonfuel minerals. A smaller market, coupled with a weakening dollar, means less capital available for investment in the kinds of equipment and technologies that could enhance our productivity and recapture our competitive edge. This circular problem approaches a "Catch-22" status, impairing further productivity growth (McKee 1981).

We need to address our economic problems from the perspective of their interdependence on lagging productivity. The Committee for Economic Development recently stated, "This country cannot reasonably hope to control inflation, raise real income, and improve the quality of living unless the unfavorable trend in productivity is reversed" (Bolino 1981).

## What We Need to Know about Productivity

Productivity is a central issue, these days, in any discussion about the economy. This is not only because it is a main component in measuring the gross national product and the national economic situation, but because its recent slowdown has been so pronounced after years of dependable increase (Bolino 1981). But there is a lot more talk about productivity than there is real knowledge about what it is and what causes it. Few terms have had so many different interpretations, and yet have been used as though a precise definition existed (Hershauer and Ruch 1978). Sound research and theory are noticeably lacking, and are sorely needed.

### Defining Productivity

The term "productivity" is not used clearly or consistently, even in the professional literature, and it has proven a slippery term to define (Hershauer and Ruch 1978).

Productivity is not production, but it will improve our production performance. Productivity is not profitability, but it will improve profit. Generally, productivity is viewed by management and union policymakers as the overall effectiveness and performance of individual organizations (Katzell and Yankelovich 1975). More specifically, productivity is a relationship or ratio between the goods and services we produce for clients and transfer to them through the price mechanism. It is an input-output ratio, where the inputs are person-hours of work, materials, energy, and capital (Christopher 1981), and the outputs are the products or services sold. In the broad sense, it should refer to the ratio of *all* outputs of an organization to *all* of the inputs employed (Hershauer and Ruch 1978). This is sometimes referred to as the multiple input-output, or total factor measurement, of productivity (Arai 1981).

To give an example, if only the traffic tickets issued by police officers are counted in measuring their productivity and determining their wages, the incentive for officers is to issue routine traffic violation citations because of their speed, rather than to become involved in other, more serious law enforcement duties such as arresting reckless or drunken drivers, which are time-consuming.

Inputs in the productivity equation of work organizations might include many subtle factors, such as sabotage, absenteeism, turnover, scrap and other waste, and theft, as well as wage and benefit costs, energy, material, and plant and equipment investments. On the other hand, the definitions for outputs could be expanded to include the long-term benefits to the company, improved profits for shareholders, improved international position, improved products and product quality to consumers, and more elusive factors such as improved environmental impact and impacts on the community. Looking at productivity from another angle, the *quality* of the decisions made by people in the service or public sector can be much more important than the *quantity* of the paper they process (Auerbach 1981). It may be more important to consider productivity in terms of the quality of the cars rolling off the assembly line than simply to take a count of how many cars were produced in a day. Obviously, there should be an optimum balance between quantity and quality.

### Measuring Productivity

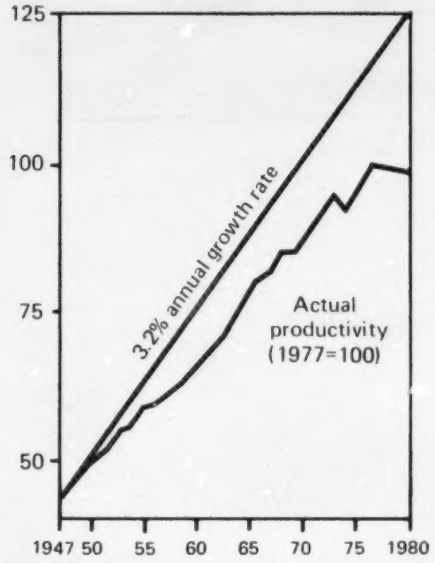
The Committee on National Statistics studied the problems involved in measuring productivity gains and losses, and conceded that the complexities make the measurement of productivity more of an art than a science (National Academy of Sciences 1979). Even so, that same report suggested that a sufficient body of information and data exists about national productiveness to allow worthwhile measurement to take place (Striner 1981a).

It is not the purpose of this paper to deal with the construction of complex productivity indexes. Instead, what follows is a brief overview of changing productivity levels that are important to understanding why we, as a nation, currently find ourselves in a productivity slump.

Productivity levels generally experienced modest increases throughout the nineteenth century, and leveled off to around 2.4 percent annually following World War II. Beginning in 1966, though, there was a disturbing deceleration in productivity growth, which was down to 1.6 percent by 1973, and fell to an average of 0.8 percent between 1973 and 1978. Since 1978, productivity levels have continued to decrease annually, and have actually fallen below their previous year's productivity level (Bolino 1981), as is seen in figure 1.

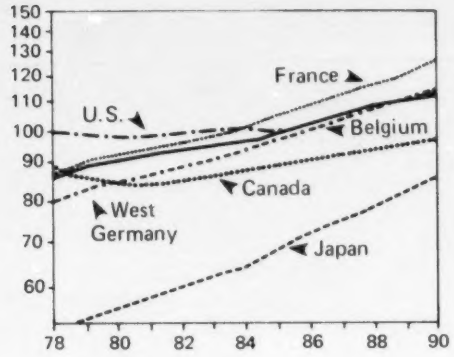
At the end of World War II, the level of American productivity was almost double that of the United Kingdom and France, three times the level of Germany and Italy, and seven times that of Japan. Japan and Western Europe rapidly rebuilt their war-devastated industrial facilities, however, while the United States seemed to be satisfied with its then-mature industrial facilities and technologies. By 1973, Canada, the Netherlands, Sweden, Belgium, and France reached at least three-quarters of the United States' level of output per hour, and Japan

**Figure 1** Output per Hour of All Persons Employed in Private Business Sector (1947-80)




Source: American Productivity Center, Houston, Texas, 1981.

**Figure 3** Projected International Productivity Trends, 1978-90 for Six Nations Leading in National Productivity Levels*

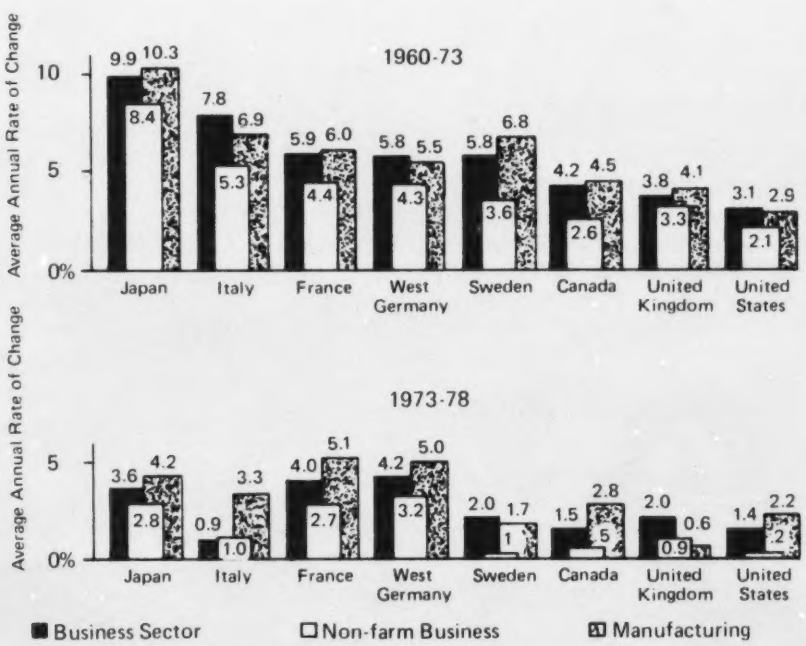



* "Productivity" is expressed in terms of Real (1970$) GDP per hour worked.

Basic data: Angus Maddison, 1981 revision of data in the paper, "International Productivity Comparisons–National Differentials."

Source: American Productivity Center, Houston, Texas, 1981.

**Figure 2** Rates of Growth in Labor Productivity: Total Business, Nonfarm Business, and Manufacturing Sectors (Eight Countries, 1960-73 and 1973-78)




Source: American Productivity Center, Houston, Texas, 1981.

and West Germany's productivity levels were over twice what ours was, especially in manufacturing (see figure 2). The productivity improvement in these countries has continued to be substantial during a period when American productivity has continually declined. Soon, the overall productivity level of the United States will be surpassed by foreign countries with smaller work forces and other resources. Figure 3 illustrates that takeover.

Burton Malkiel, chairperson of the economics department of Princeton University, recently described the unusual falloff in U.S. productivity as "the most basic sickness of the U.S. economy" (Skibbins 1981). There is little debate that productivity growth has slowed, or that the slowdown affects inflation, unemployment, the balance of payments, our standard of living, and our national and international economic and political position. The slowing is a fundamental, secular change, and not merely a cyclical slowdown. Unfortunately, the causes are not clearly understood, nor are the actions needed to reverse the trend (Haggerty 1980).

**Causes of Lagging Productivity**

Economists and other experts have expressed three major positions on the causes of lagging productivity: (1) the cause of lagging productivity since 1973 is a mystery; (2) one to three factors, and only those, are the prime causes; and (3) multiple factors are responsible. The disagreement among experts is intense and real (Bolino 1981).

One such expert, Dr. Edward Denison of the Bureau of Labor Statistics, examined the economic growth of the United States since 1929. He had serious problems accounting for the real causes of the decline in productivity since 1973, stating, "What happened is, to be blunt, a mystery" (Denison 1979).

Among those experts who believe that a limited number of factors are the sole causes, the following factors are believed to be the major culprits: the slowdown in growth of high-productivity industries (Bolino 1981); the weakness of capital formation for the period between 1973 and 1978 (Kutscher, Mark, and Norsworthy 1977); the end of farm-to-nonfarm shift of hours (ibid.); and the lack of investment in people, machinery, and research and development (Skibbins 1981).

Those experts who believe that the causes of lagging productivity are multiple have listed the following factors: (1) curtailment of expenditures on research and development; (2) reduction of patent applications, thus depressing the opportunity for major technological advances; (3) decline of "Yankee ingenuity"; (4) a lag in the application of knowledge due to the aging of capital investments in equipment and processes; (5) governmental regulations; (6) governmental paperwork required of businesses; (7) loss of the work ethic in the work force; (8) errors in measurement data; (9) changes in the quality of management; (10) rises in energy costs; (11) lack of business investment in technology and people; (12) lack of personal savings; (13) declining rates of capital utilization and reinvestment; (14) relatively low rates—and related problems—of low productivity service industries; (15) increased numbers of less experienced young workers, minority members, and women joining the work force; (16) cyclical fluctuations in the economy; (17) the end of the shift in labor from agriculture into industry; (18) escalation of inflation; (19) late deliveries; (20) work dissatisfaction; (21) disruption of work commitments; and (22) lack of government-backed incentives (Christopher 1981; Denison 1979; Jorgenson 1980; Parrott 1981; Striner 1981b; Waldman 1980).

Of all the causes mentioned, two key factors are repeatedly cited by economists, and these two factors are believed to affect productivity in other countries as well. They are: (1) *lack of up-to-date technology* (equipment, processes, facilities) and (2) *lack of investment in human resources* (knowledge, advancement, and development of workers' skills and capabilities).

Human resource development, when defined as the educational level of workers and advances in knowledge created by the work force, contributed more than a third of the value of technological advancement responsible for economic growth from 1948 to 1973. This is critically important to all of us as Americans, but especially to us as persons responsible for the development of human potential. Advances in "hard" technology—tangibles like transistors or assembly lines—have too often been given the credit for past growth and the responsibility for future recovery. Economic figures show that human resource development is equal to or exceeds the value of technological advancement in stimulating past economic growth, and this factor should be given equal or more attention as a major source for economic recovery in the years ahead. *Lagging productivity is caused in great measure by lack of investment in human capital and in technology.*

**Human resource development is equal to or exceeds the value of technological advancement in past economic growth.**

By treating the basic cause of our economic difficulties (lagging productivity caused by a lack of investment in human capital and new technology), we can expect to see improvements in both the "bottom lines" of our industries and in the economic well-being of our population (Thurow 1970). Such investment will reduce inflation and unemployment, and will thus increase the standard of living (Meyer 1977). The challenge is clear: if we are to improve our nation's economic status, we must first increase our national productivity (Taylor 1981).

There is no doubt that the role of human resource development in increasing productivity (and therefore improving our economy) is a critical one. But unless we understand the role of public and private education and training within the context of new economic policies, we face the danger of designing improvement efforts that are disconnected and counterproductive. Given the chance, public and private training and retraining of our existing work force can prove to be the all-important link between the employment and training efforts in our new economic development strategies (Wolfbein 1981).

### What We Need to Know about Economics

To understand clearly the interrelationships among productivity, the economy, and human resource development, we must look at (1) how our economy has expanded and contracted during the past thirty-five years, (2) the controls that have alternately restrained and stimulated the economy, (3) the role of lagging productivity in our present economic condition, and (4) the economic tools that are available for dealing with the situation.

From the mid-1940s to the early 1970s, our economy was marked by unprecedented expansion. It was the time of the postwar baby boom, the purchase of new homes, the "flight to the suburbs," the investment in first and second cars, and the purchase of all the goods and services necessary to the new American life-style. For the consumer, there was low unemployment, stable prices, no inflation, and a sharp rise in the standard of living. For the producer, there was a lack of serious foreign competition, as well as strong productivity gains because of the workers' increased level of education, the increased economic savvy of management, and great progress in technology. Consumer savings stockpiled during the war rounded out this era of positive economic growth by providing a ready supply of capital for industrial expansion (Carnevale 1981b).

For the next thirty years, economic policies based on the rosy decade of the 1940s were effective for the United States. In keeping with the economic theories of Keynes, the economy was easily monitored and adjusted through monetary and fiscal policies that were targeted to reduce inflation, stabilize prices, and minimize unemployment. Simple adjustments in taxes, federal spending, and the money supply were enough to keep the economy under firm control. The concept that you could spend your way out of a recession and times of high unemployment by cutting taxes and boosting government spending was well-suited to a time when capital investment and productivity levels were high.

But the system began to crumble in the early 1970s. We noticed that our economy was starting to lose its strength and progressiveness. The driving forces of the economy of the baby boom, pent-up demand, and the flight to the suburbs were no longer there. We saw the end of yearly increases in our productivity levels, and we saw the creation of a new world market that was strongly laced with competition. Simply stated, the economic controls used from the mid-1940s to the early 1970s were losing their effectiveness.

Simple supply- and demand-side economic policies have not worked successfully since the 1960s, a period that marked the end of a positive ratio between productivity and wage gains as well as the end of a market structure nearly devoid of foreign competition (Carnevale 1981c). Today, most economists agree that the United States' economic problems go deeper than unduly high or low readings on economic indicators such as inflation, unemployment, productivity growth, and savings (Etzioni 1981). According to federal Budget Director David Stockman (Greider 1981), the so-called traditional economic policies now actually exacerbate inflation and unemployment. As was mentioned earlier, reducing inflation today by 1 percentage point, using traditional economics, causes an increase in unemployment that is in excess of 1 million persons; this in turn adds over $25 billion to the national deficit.

### New Economic Policies

Today most economists seem to agree that the foundation or infrastructure of the American economy has weakened and needs shoring up (Etzioni 1981). Clearly, a new framework of economic understanding—one that addresses the infrastructural problems now inherent in our economy because of lagging productivity and increased foreign competition—will be needed to begin this repair (Jorgenson 1980). Traditional monetary and fiscal policies that are used to alter our nation's money supply must be expanded in order to increase technology and human resource development in the very factors that drive our economy: a productive business sector or a pro-

gressive industrial base (Carnevale 1981b). So far, our traditional economic policies have failed to focus directly on shoring up the business sector or to place attention on public education, employment, and training.

To date, three separate economic approaches for accomplishing this policy expansion have emerged (Etzioni 1981). Amitai Etzioni, director of the Center for Policy Research in Washington, D.C., arranges these economic approaches on a continuum from radical conservative through moderate central to left liberal.

**A new framework of economic understanding will be needed.**

### A Conservative Approach

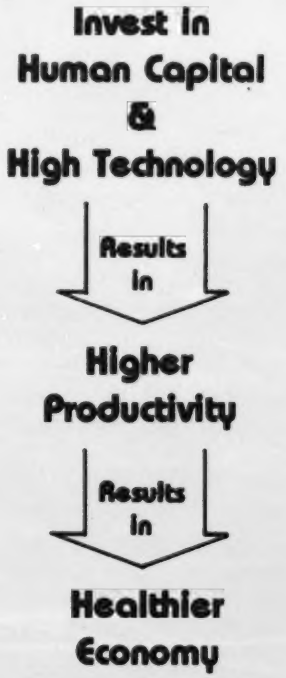
At the "radical conservative" end of the spectrum, we find what is sometimes called supply-side economics. Proponents of this philosophy say that what ails our economy is an overinvolvement of government in the lives of our citizens and in the operation of our businesses. The remedy is to move government out of these areas, and allow both consumers and industrialists to return to whichever sector they prefer. Opponents of the philosophy argue that this approach does not guarantee any improvements in the productivity of the industrial base.

### A Liberal Approach

The "left liberal" approach holds the notion that government needs to intensify its involvement in the economy because of one basic factor: business, industry, and consumers have not invested their money correctly in equipment, technology, human resources, or research and development. In this philosophy, the solution to our economic problems lies in government-guided, collaborative efforts in which business and labor pull together. Industries designated as "winners" are to be showered with government subsidies, loans, loan guarantees, research and development write-offs, and other types of support. The "losers" would be buried, or in the more common vernacular, "sunsetted." Arguments against this approach reflect the concept that "left liberalism" smacks of creeping socialism, and that most of our population would question whether or not the government has the data, insight, and ability to direct a major share of our industrial activities.

### The Real Supply-Side Approach

The third approach is referred to as reindustrialization, or what might be called "real supply-side" economics. A basic component of this approach is its emphasis on investment in both human resources and new technology in order to strengthen the industrial base of our country. Real supply-side economics is defined by Dr. Lester Thurow, professor of economics and management at the Massachusetts Institute of Technology, as a systematic effort to increase the quantity or quality (supply) of labor and capital entering the economy, and to improve the efficiency with which these components are used (Parrott 1981). The emphasis of real supply-side economics is on improving the industrial base: the very "engine" of the economy. The focus is on improving both the human and technical capital of the business sector.




Vocational education and occupational training are the educational components of the real supply-side approach for economics (Feldman 1981). The concept recognizes education and training as being necessary to the development of a productive and mobile work force (Carnevale 1981b). In light of such recognition, it is perhaps fitting that the slogan for real supply-side economics is "revitalization, reindustrialization, and recapitalization."

**There must be a focus on improving both the human and technical capital of the business sector.**

### Human Capital Investment — A Significant Part of the Answer

As you can see, real supply-side economics focuses on improving the industrial base of our country. It places major emphasis on improving the human and technical capital of enterprise as a fundamental approach to economic recovery. Another important element of the approach is that training and occupational education is also a critical part of the recovery process.

There is no doubt that improved productivity and eventual economic recovery require an investment in human and technological capital. Currently, however, some feel that the emphasis on human capital investment as one of our government's economic priorities has all but disappeared—despite mounting evidence from other countries that human capital investment indeed has a dramatic effect on increasing productivity and promoting economic recovery (Skibbins 1981). Although technology is important, the feeling that human beings and their development are even more important is becoming increasingly widespread. It is being recognized that economic problems revolve around productivity, and that productivity relates more directly to labor than it does to capital investments in technology (Parrott 1981). According to available economic growth research conducted between 1948 and 1979 (Denison 1979), the fact of the matter is that human capital investments accounted for a larger share of productivity growth during this period than did machine capital (Carnevale 1982). In terms of statistics, investment in plants and equipment accounted for only about 10 percent of our economic growth during this period, while advances in technological knowledge and the increased education of the labor force accounted for over 45 percent of the growth (Watts 1980).

Dale Parnell, president of the American Association of Community and Junior Colleges, questions the logic of encouraging investment in machines rather than in people. According to Parnell, "Our society will be evaluated based on what we do with our people and not our machines. . . . not to use people well is waste" (Parnell 1982). The late Congressman William Steiger phrased it this way: "We

seem to have little problem in giving tax breaks for capital investment and machine depreciation, but make great resistance at the suggestion of tax incentives for employee training and job upgrading" (Rosow 1974).

**We seem to have little problem in giving tax breaks for capital investment and machine depreciation, but make great resistance at the suggestion of tax incentives for employee training and job upgrading.**

### What Do Human Capital Economists Say?

The concept that human capital investment is critical to increasing productivity and promoting economic recovery is supported by the studies of human capital economists. Since the late 1950s, this area of study has continued to grow. Edward F. Denison, a long-time senior fellow with the Brookings Institution and now the associate director of the Bureau of Economic Analysis, U.S. Department of Commerce, has carried out five landmark studies on "growth accounting," or the process of determining the sources of economic growth.

In a recent publication, *Accounting for Slower Economic Growth: The United States in the 1970s,* Denison (1979) made separate measurements of a number of key factors that have affected the growth and slowdown of the U.S. economy since 1948. After conducting detailed analyses on a vast amount of data, he was able to demonstrate repeatedly the impact that education and advances in knowledge (as applied to technological growth and improved manufacturing processes) have had during our periods of great economic growth and slowdown. Through his work, he was able to demonstrate that the role of education and advances in knowledge transcends the role of new facilities or equipment. Thus Denison's findings have provided a strong leg of support for the concept that education and advances in knowledge have had much greater impact on economic growth than has capital investment.

Other prominent researchers have also offered their support to the concept that education is a key factor in economic development. Amitai Etzioni, director of the Center for Public Research, is already well known for his commitment to the importance of human capital investment. Recognized as a leading spokesperson on the reindustrialization of America, Etzioni has presented the primary thesis that for America to maintain both a high standard of living and a strong national defense on a long-term basis, an intensive ten-year effort to increase productivity is necessary. He has warned that we cannot afford to underrate the value of human capital in this effort. Reindustrialization is a process that requires a motivated, educated, and trained work force, and any economic policies targeted to rejuvenate our productive capacity must place an emphasis on *both* technology and people.

The list of supporters is growing. Dale Jorgenson, repeatedly cited for his work in understanding the impact of human capital investment on productivity and economic recovery, has expressed the opinion that human capital is indeed an important factor to economic growth and slowdown (Jorgenson 1980). Other writers who have studied economic growth, such as Shultz, believe that schooling is a major source of human capital and that investment in schooling increases future productivity (Evans 1981). The work of Martin J. Bailey (1971), associate dean of the Graduate School of Management, University of Rochester, echoes the belief that productivity growth is influenced by investment in new technology, and that there is a clear need for increased human capital investment in order to improve our chances for increased productivity and economic recovery. Lester Thurow (1970), the noted authority on human capital and author of *Investment in Human Capital,* believes that traditional economic theory does not consider the important role that human capital has in increasing productivity. As a note of hope, however, Thurow has pointed out that research findings showing the importance of human capital to economic growth and productivity are beginning to surface.

There are others who share this note of hope. Anthony Carnevale (1982), a consulting economist with the American Society for Training and Development, believes that as a nation, we are just beginning to realize the importance of the human factor in productivity. Citing various studies, he compares the United States' lack of continued investment in human resources to the emphasis placed on this factor by other countries, and the corresponding effect that this lack of investment has had on our economic status. It is his belief that our new directions for economic recovery must and will include a heavy reliance upon human capital investment.

### Investing in Human Capital: The Corporate Experience

Relying on past observation, experience, and research, companies in the United States and foreign

countries can testify that human capital investment does work. Companies such as General Motors, Delta Airlines, R.G. Barry Corporation, Hewlett Packard, Control Data, IBM, Wells Fargo, Kodak, and 3M are all examples (Ouchi 1981; Pascale 1981). Countries with a national commitment to human capital investment, such as Japan, West Germany, Italy, and France, all show the positive impact it can have on increasing productivity (Arai 1981). Here in this country, states such as Oklahoma, North and South Carolina, and Florida have demonstrated that a state-level commitment to human capital investment can have very positive effects on state economic recovery (Jackman and Mahoney 1982).

The Bureau of International Labor Affairs (ibid.) has reported that the decline in U.S. trade since the 1960s "is the result of difference in the growth of the net real investment in equipment *and* acquisition of labor skills through education and training." Between 1963 and 1975 the United States' share of the world's skilled workers fell from 29 percent to 26 percent. Internationally, we have dropped from the second to seventh place in the skill endowments of our workers since the early 1970s, and from first to seventh place in the ratio of skilled workers to population. The skill content of our imports continue to increase while the skill level of our exports decreases. Other countries are steadily increasing their numbers of engineering, science, and other technical graduates at the professional and technician levels. Japan, a country half our size in population, graduates twelve thousand engineers per year—about equal in number to our own annual level (Carnevale 1982). Indeed, other nations' economic health testifies to the importance of human capital investment, and gives us clues for directions in which we must move.

The future of public and private training must be based on an expanded vision of economic policy, how productivity affects economic recovery, and how human capital investment is a key to improving productivity (ibid.). The challenges and opportunities for those of us involved in education and training are vast and exciting.

**The future lies with an expanded vision of economic policy, how productivity affects economic recovery, and how human capital investment is the key to improving productivity.**



### Reindustrialization

Reindustrialization—also called revitalization or real supply-side economics—has been cited as a solution to our lagging productivity and its disastrous effects. Amitai Etzioni (1980, 1981), recognized as a leading spokesperson on the topic of reindustrialization in America, has claimed that "for America to sustain a high standard of living and set aside resources needed for national security, at least a decade of shoring up productivity capacity is required. In essence, we are in need of a period of reindustrialization." Etzioni believes that American society has allowed itself to become underdeveloped.

Herbert Striner (1981b) believes that our country needs to develop our technological capacities, our labor force, and the national policies vital to fostering such a direction. Daniel Taylor (1981), former secretary for Vocational and Adult Education, U.S. Department of Education, echoes the message that reindustrialization is needed, and has called for a new partnership among government, labor, and the private sector in order to accomplish what will need to be done. William Roesch, president of the United States Steel Corporation, has quoted that company's beliefs, as expressed in their current advertising: "In these United States, reindustrialization is not just an interesting concept . . . it is a vital necessity." He also has pointed out that the neglect of the past twenty years will require a mammoth effort to revitalize the steel industry and the economy as a whole in the next decade (Roesch 1981).

The development and investment in pneumatics, hydraulics, electromechanics, lasers, fiber optics, advanced computer applications such as computer-assisted design and computer-assisted manufacturing (CAD/CAM), and the many applications of microcomputers and microelectronics all represent the beginning of reindustrialization in our country. Technology is expected to undergo major changes about every four years now, compared to a major change every thirty-five years in the last century. This vastly speeded-up rate of change has staggering implications for human resource development (Hopkins 1982). Now is the time—the iron is hot—for America to revitalize its industries, making optimum use of its technological opportunities, and especially of its capacity for private sector training and public occupational education, in order to achieve the reindustrialization the country so badly needs.

A recent Harris poll (Harris 1981) found that industry, labor, government, and the general population believe that lagging productivity is our number one problem. Never before have all four groups agreed to such an extent on one issue; and if the poll is to be believed, we are indeed ready for the challenge of reindustrialization.

# Partnership Possibilities in Human Resource Development

# Partnership Possibilities in Human Resource Development

### What Business and Industry Is Doing

One of the most important things that we, the decision makers in public occupational education, need is a solid understanding of the scope of efforts being made by business and industry (B/I) in improving human productivity and the quality of work life (QWL). This section begins by reviewing what B/I is doing in this area, and what the magnitude of its commitment is. The emphasis here will be on B/I's investments in human capital rather than in high technology, which is well covered in other writings. The rest of the section identifies two of the more critical management practices being used by B/I to improve productivity and QWL. These practices—job redesign and employee participation—present important opportunities for community and technical colleges to assist in the reindustrialization process by providing training, retraining, and upgrading for workers, supervisors, and managers in the low to mid-levels. The section focuses on specific training needs and on how B/I and postsecondary occupational education can work together to meet them.

Interviews with consultants on productivity and QWL, with managers of internal corporate resource development and with leaders in the field of community and technical college administration, revealed that not only is B/I beginning to do a great deal to improve productivity and QWL, but that the need for related training—which could be delivered through community and technical colleges—is massive. This information was backed by findings from Vaughn and Whelan (1981) and other studies.

Productivity, as we are using it here, is synonymous with efficiency, and is used in the broad sense described earlier. Quality of work life refers to a process that encourages a high degree of employee satisfaction with work and the work environment. In the research for this concept paper, it was found that a tremendous overlap between productivity and QWL does exist. Improving one frequently improves the other, and much of the training needed to develop capacities in one area is also needed for the other.

### Productivity on the Move

C. Jackson Grayson, the director of the American Productivity Center, has indicated that we may be encouraged by the growing interest in the subject of productivity that has been shown by U.S. companies, compared to their attitudes of general apathy just a few years ago (Waldman 1980). The first international conference on QWL was held in 1972 in Toronto, Canada, and attracted fifty persons; in 1981 it attracted over fifteen hundred people from all over the world. Over a thousand case studies have been documented showing American business and industry utilizing various efforts to improve human productivity and/or the quality of work life ("Quality of Work Life: Catching On" 1981). Nationally, over 30 productivity and QWL centers have been established, and it is estimated that there may be as many as 50 to 150 such centers and subcommittees of professional associations in existence (National Center for Productivity and Quality of Work Life 1978).

The president of the United States has established a national productivity advisory committee. Perhaps the single largest activity related to improving productivity and QWL is now going on in the military, where special officers have been assigned to almost every operating military base in each branch of the services (Wright Patterson 1982). Groups involved in education and training, such as the American Association of Community and Junior Colleges, the American Society for Training and Development, and the American Vocational Association, are emphasizing these areas as critical ones to be studied and on which to act. Labor, too, has made these areas into priorities (Kirkland 1980; Ross 1981).

### Technology Plays an Important Role

Along with new management practices, technology has the potential for improving American productivity. The application of computer and microchip technologies, telecommunications systems, CAD/CAM and computer-assisted graphics, and word processors are revamping the way work and work places are designed and defined (Auerbach 1981).

Facsimile machines will soon be available—and cost-effective—for widespread home use ("Japan Takes Over in High Speed Fax" 1981). Robotics will be a vital part of this movement in high technology. It now costs an estimated five dollars an hour to run an average robot, compared to fifteen to twenty-five dollars an hour for a traditional human worker. The American Society of Manufacturing Engineers has predicted that by 1988, 50 percent of the labor in small component assembly will be replaced by automation, and that by 1990, the development of sensory technologies will enable robots to approximate human capability in assembly.

**Management Practices Could Be the Key**

Although advances in technology are important for improving productivity and QWL, the use of *new management practices* represents even greater opportunities. New technology is costly both in terms of money and time invested, and in a time of tight money, developing the technologies and making their applications cost-effective may be beyond the means of many. New management practices have decided advantages for fast implementation with quick return on investment. It is essential for us to know about the new management concepts being used (Hopkins 1982).

New management practices to improve productivity and QWL have, in many cases, grown out of organization development (OD) theory and practice in the private sector. Basically, OD is a planned effort to improve the management of organizations (Patten and Vaill 1976). Here is a laundry-list of these management practices:

- Management by Objectives
- Causal analysis
- Incentive systems (such as the Scanlon Plan)
- Cost-benefit analysis
- Work methods/measurement/simplification
- Lifelong employment
- Insight training
- Socio/technical theory applications
- Management development
- Improving the work environment
- Strengthening communications
- Feedback systems
- Gnatt and PERT charts
- Time management
- Performance appraisal
- Productivity audits
- Decision making and problem solving
- Zero-based budgeting
- Role negotiating
- Confrontation meetings

A few specific interventions include career development and planning, flexitime, programs for individual employee wellness, coaching, and ergonomics (the application of biological and engineering data to problems related to the human-machine interface).

Job redesign is a management practice that broadens the responsibilities and influence of employees on their jobs. It ranges in scope from adding a variety of additional tasks to an existing job to reduce boredom (Burck 1981) to restructuring tasks and responsibilities to give workers more control over their tools and processes involved in performing their jobs (Patten and Vaill 1976).

Employee participation as a management practice is more akin to the relatively flexible Japanese management models than to the rigid hierarchical management structures to which we are accustomed (Burck 1981). This intervention recognizes the value and savvy of employees, and gives them greater opportunities to become involved in the operation of the company. Involvement varies from involving employees in councils for the purpose of improving the quality and quantity of products and/or services, to participation in the ownership and management of the operation.

**What Critical Management Practices Are Being Used**

The number one opportunity for improving productivity in this country may be through better management of human resources. Joji Arai, the director of the Japan Productivity Center, thinks that to be successful at it, the United States will need to develop a new mentality about the value of investing in people, as well as a new management style that looks to people—rather than to technology—for solutions to our productivity problems (Arai 1981). One of the most important things we will need to learn to do is how to capitalize on the intelligence and savvy of the people who hold the jobs in our companies.

Two management practices that may be critical to accomplishing these goals are *job redesign* and *employee participation.* These are particularly pertinent here, because these two strategies for improving productivity require the kinds of training that could be partially or wholly delivered through collaboration between community or technical colleges and B/I. These management practices are also the most likely ones to affect the greatest number of workers, supervisors, and lower level mid-management personnel in this country in the next ten years. Finally, these strategies will be examined closely here because they are considered to have powerful potential to improve both productivity and QWL.

Up until now, training for the development and use of job redesign and employee participation in companies has been lacking (Vaughn and Whelan 1981). There is great potential, though, for community and technical colleges to help B/I fill this critical training need by capitalizing on our existing programs and staff. This can lead to higher productivity, better QWL, and healthier local economies, because it will not involve the exorbitant capital investments associated with bringing in advanced technologies.

Both job redesign and employee participation practices are based on recognized theories of human resource management and motivation. The practices have been used with great success in foreign countries, in foreign-owned U.S. plants, and in a small number of American companies.

The work of five respected theorists—Abraham Maslow, Douglas McGregor, Fredrick Herzberg, William Ouchi, and Richard Pascale—serve as the foundation on which job redesign and employee participation practices are based. These theories of m

The work of five respected theorists—Abraham Maslow, Douglas McGregor, Fredrick Herzberg, William Ouchi, and Richard Pascale—serve as the foundation on which job redesign and employee participation practices are based. These theories of motivation, though differing in many respects, all stress the need of workers for greater involvement in their work and in the decisions made concerning their work, as well as for more responsibilities, recognition, and feedback. Each theory proposes that when workers become more involved, productivity and QWL increase.

The experience of companies in Japan, France, Germany, Sweden, and the Netherlands in applying these theories to management practices has proven the benefits, and companies in the United States are catching on, too. One study, done in 1970, showed that of 300 companies surveyed, over 80 percent were moving from incentive approaches in management to the behavioral approaches incorporating motivational factors (Ouchi 1981). The percentage is probably much higher today.

### Delivering Training for Job Redesign

In its broadest sense, job redesign has attracted—and will probably continue to attract—greater attention than any other of the new management practices as an avenue for improving productivity and QWL (Katzell and Yankelovich 1975). Job redesign can be the cornerstone for an entirely new style of organizational management, for redesigning and restructuring the work itself is one of the most powerful ways to develop an organization (Etzioni 1980). Job redesign puts "work and fun at the same ends of the pole" and allows increased productivity to go hand in hand with both improved worker satisfaction and growth (Hackman and Oldham 1980).

Job redesign improves both the productivity and the quality of work life in a company (ibid.). The reindustrialization movement in this country requires more efficient processes, equipment, and workers, and it will require job redesign on a scale not approached since World War II (Evans 1981). Different estimates suggest that from 20 percent (20 million) to 80 percent (80 million) jobs in this country could be substantially improved through job redesign.

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**Job redeisgn improves both productivity and the quality of work life.**

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### What Job Redesign Is

Job redesign is an effort to enhance worker motivation by increasing the levels of responsibility, meaningfulness, and feedback that are built into jobs (Hackman and Oldham 1980; Kirby 1977; Parsons 1978). Strategies that are used in implementing job redesign include combining tasks, forming natural work units, establishing client relationships, loading the job, and opening feedback channels (Hackman and Oldham 1980). Job redesign focuses on structuring or restructuring both the processes and procedures involved in jobs and job responsibilities. It means examining how a job is developed, arranged, executed, measured, and controlled. One of the most important principles is to increase the discretionary judgment of the worker over as many aspects of the related tasks and duties of the job as possible (Mali 1978).

### Expected Outcomes

Job redesign is expected to produce high internal motivation to work, high "growth" satisfaction, high general job satisfaction, high work effectiveness, and reduced absenteeism, tardiness, turnover, and incidence of grievances. Work effectiveness is improved by increasing both the quality and quantity of goods and services produced. Some researchers also suggest that theft, sabotage, and deliberate low productivity ("goldbricking") are reduced (Hackman and Oldham 1980; Herzberg, Mausner, and Snyderman 1959).

Among many researchers in this area, theorists most recognized for their work in job redesign are Frederick Herzberg, and the team of J. Richard Hackman and Fred R. Oldham (Dowling and Sryles 1978).

Job redesign is often used as a rubric encompassing job enrichment, orthodox job enrichment, job enhancement, job enlargement, and job islands. Most often, though, job redesign refers to the restructuring of the job itself, including creative worker autonomy, more democracy in the work place, improved feedback, and increased responsibility and meaningfulness of the job.

Job redesign, by its very nature, requires significant training. Skill variety is a critical element often added to a job to improve its meaningfulness. Redesigned jobs are organized so they challenge or stretch the skills and knowledge of the worker, so that the worker becomes more involved and the work becomes more fulfilling. Clearly, for people to feel comfortable in redesigned jobs, they need to be trained in the high competencies and knowledge essential to the job.

**Job redesign by its very nature requires significant training.**

### General Training Needs

Two specific kinds of training are required for successful use of job redesign as a management practice. First, workers need technical training to ensure that they have the knowledge and skills required to execute their enriched tasks competently. Second, workers need training in effective interpersonal relationships and in decision making. Enriched jobs often involve much more interpersonal contact and communications. Workers are also responsible for making many more decisions related to the content of their jobs. Prior work experiences of employees may not have given them enough opportunities to exercise or refine their skills in those areas.

These kinds of training need to be tailored to meet the needs of the particular company or division. Those of us involved in the development or delivery of this training will need a background in job redesign and in the kinds of training needs that typically crop up as a result of job redesign. Only with a thorough understanding of these needs will we be able to develop and deliver the training effectively.

There are few detailed accounts of the specific training needed for workers in redesigned jobs. The next few pages offer an approach for assessing and delivering related training for workers, supervisors, and lower level mid-management personnel in job redesign situations.

Training Needs for Job Redesign

### Employee Orientation Training

One of the most important elements of successful job redesign is properly preparing the workers for it. Prior to implementation of the new job design, workers need to know what job design is, why the company is installing it, how it will redesign the work, and what job redesign means for the company and for the workers themselves (Hiegel 1982; Morse 1982). It is important for them to understand the basic philosophy, principles, and techniques involved in job redesign. Workers will want to understand and experience the company's commitment to the new practice, and they will want to know where and why problems might be expected. Finally, workers will need to know that they will receive retraining, and what kind of training that will entail. An orientation period providing this kind of information can give workers an opportunity to defuse their fears, and is vital in motivating them to accept and—it is hoped—become enthusiastic about the job redesign.

### Employee Technical and/or Scientific Skill Development

Workers whose jobs are redesigned may need additional skills and knowledge in some of the following areas: (1) new manufacturing or support services processes; (2) the operation and maintenance of tools and equipment; (3) background information about unfamiliar products or services with which the worker will now be involved; (4) techniques for im-

proving work efficiency in order to comply with or exceed standards; and (6) approaches for measuring, controlling, and making corrections related to quality and quantity of output. Workers may also need applied statistics and analytical skills to help them gauge the impact their efforts have on improving productivity.

These skills areas come from the technical disciplines, including manufacturing, quality control, industrial engineering, and business. The greater the understanding and level of skill, the more significant the workers' satisfaction will be, and the more satisfied workers are, the more likely it is that the company will realize added productivity through employee contribution.

### Employee Communications and Basic Skill Development

Job redesign often increases the level of communication, responsibility, and scientific or technical knowledge needed by a worker. As a result, such workers may need additional training in the following areas: (1) basic applied skills in technical reading, writing, and mathematics; (2) planning, organizing, and scheduling work; (3) solving problems, setting goals, and making decisions about the use of resources (Hodgetts 1979; Ives 1976); (4) creative thinking; and (5) for selected workers, training to enable them to become self-supervising. Basic computer literacy may also be needed (Miller 1982).

If the job redesign involves group work or frequent interaction with other workers, training in group processes, developing trust, and self-understanding may be critical. Verbal and nonverbal communications, conflict resolution, and reaching consensus are particularly relevant to the interpersonal relationships so critical in teamwork and in giving and receiving information necessary to perform many job tasks. Some employees may need training in leadership or team-facilitation skills. Finally, some may make excellent use of assertiveness training to help them speak up and take risks—both of which can be vital to improving productivity.

Additional skill development needs are given later in the paper, in the section on employee participation.

### Supervisor Training Needs

Supervisors at all levels need to understand and become involved in job redesign in order to make it work for their company. When job redesign efforts fail, it is often because the supervisory staff lacks the understanding, commitment, and training needed (Wright Patterson 1982). Perhaps no other group needs the extent of training that supervisors need, because when supervisory staff are not trained to mesh their decisions and actions to the new responsibilities and increased autonomy of the workers whose jobs have been redesigned, worker satisfaction plummets and so does productivity.

The roles of supervisors in a job redesign situation are many and diverse. They may include (1) gathering data for charting trends and forecasts in work volume and work force needs; (2) training employees in their new responsibilities and counseling them about work-related problems and career opportunities; (3) helping subordinates set performance goals and reviewing with them their performance in attaining those goals; (4) providing increased openness of communication, both upward (sharing employee concerns and ideas with higher management) and downward (sharing information about organizational objectives and policies with employees); (5) working with subordinates to develop and test innovations and procedures for executing and coordinating work; (6) modifying, where possible, aspects of the work context (e.g., compensation and control systems, opportunity structures, equipment, space, lighting, and so forth) that may be impeding employees' work or satisfaction; and (7) managing the evolution of the job enrichment process itself. All of these responsibilities may require training in skills that the supervisors may not have acquired previously, and all of these skills could be developed through training delivered by community or technical colleges in cooperation with the company.

### Supervisor Orientation Training

Like other employees, supervisors will need a basic orientation to the system of job redesign. They will need a thorough understanding of the philosophy, principles, and techniques of job redesign. Further, their orientation should include not only what supervisors need to know for their own roles, but also what employees are taught in their orientation training.

### Supervisor Technical and/or Scientific Skill Development

Beyond an orientation to job redesign in their own jobs, supervisors will need a detailed background in the theory and practices of job redesign as expressed by Herzberg, Hackman and Oldham, and other experts in the area. Supervisors will also need to understand how the theories are applied to the management of people.

Critical to supervisors' roles in job redesign is knowing specifically how to redesign jobs, what the key components are to a quality job, and how to evaluate the effectiveness of job redesign. The Air

Force has a forty- to sixty-hour training program on these concepts. Almost as important, supervisors will need training in the new and rather different supervisory skills needed in job redesign situations, specifically in (1) applying new leadership styles; (2) making better decisions that benefit the employees as well as the company; (3) resolving conflicts in job redesign situations; (4) delegating responsibilities; (5) coaching, reinforcing, and maintaining the self-esteem and good performance of workers; (6) empathizing with and supporting subordinates without removing their responsibility for action.

As mentioned earlier, supervisors may need to acquire technical and other skills related to gathering data, training employees, helping set goals, and so forth. For example, job enrichment calls for employees to address and solve higher level problems. What this means, in turn, is that the problems workers cannot solve themselves will be problems of an even higher level, and these will be the ones now brought to the supervisors. Because of this, supervisors will need scientific and technical training at higher levels in such areas as (1) equipment maintenance and operation; (2) efficient work processes and procedures; and (3) maintaining and measuring both quality and quantity of work. Advanced skills in business, such as scheduling, budgeting, and calculating cost-effectiveness, may be needed.

**Supervisor Communications and Basic Related Skill Development**

Because of the challenges presented by job redesign, supervisors are likely to need more training in technical report writing, reading, and mathematics or measuring skills. In addition, skills in listening, making presentations, and pinpointing and asking the right questions could be vital (Wright Patterson 1982).

In the area of interpersonal skills, verbal and nonverbal communications skills as well as self-understanding and empathy skills, may need to be sharpened. Skills in reinforcement and effective feedback may be essential as the give-and-take with subordinates increases under job redesign. Depending on the structure of the redesign, supervisors may need added skills in group processes, leadership skills, and team facilitation (Morse 1982). Other skills are listed in the next section under Employee Participation.

**Lower Level Mid-Management Personnel Orientation**

These lower level managers are those to whom first-line supervisors typically report. These managers will need specific information to help them understand job redesign so they can effectively participate in redesigning the jobs of their first-line supervisory staff, as well as helping those supervisors redesign the jobs of the workers. They will need the same background in the philosophy, principles, and techniques of job redesign as the supervisors.

**Lower Level Mid-Management Technical and/or Scientific Training**

Lower level managers may need advanced training in decision making, problem solving, and conflict resolution as they apply to job redesign situations. They will need to learn ways of applying new leadership styles made necessary by job redesign, including skills in delegating tasks and responsibilities, coaching, reinforcing workers and first-line supervisors, maintaining and enhancing self-esteem of their subordinates (appropriate models would also be useful here), and empathizing and providing support for subordinates without removing responsibility for action (Wright Patterson 1982). They should become well grounded in the management theories of Herzberg, Maslow, McGregor, and others, including "Theory Z" ideas (Bodek 1981). Managers may not need to acquire the detailed training in operations that first-line supervisors should have, but in some areas managers may need technical training at equivalent or advanced levels.

**Lower Level Mid-Management Communications and Basic Skill Development**

Job redesign in a company will demand new levels of communication among managers, first-line supervisors, and employees. Many lower to mid-level managers will need training to help sharpen their skills in understanding themselves and others, and in effective verbal and nonverbal communication. Skill in reinforcement and in providing appropriate feedback may be essential. Depending on how jobs are restructured, the managers may need to acquire skills in group processes, as well as in leadership and team facilitation (Morse 1982). (Additional skills are listed in the next section under Employee Participation.)

## Delivering Training for Employee Participation

Quietly—almost without being noticed—a new management practice is being incorporated into companies throughout our country to improve both productivity and the quality of work life. This practice is sometimes called employee participation. Foreign observers of our national productivity scene,

such as Dr. Fukuda (winner of Japan's 1978 Deming Prize for quality control improvement), believe that the participation of American workers in the production and decision-making processes of American companies will be our key to improving our economic situation (Fukuda 1981). A massive movement in this direction already seems to be emerging.

Sidney Harman, former undersecretary of the U.S. Department of Commerce, believes that the mind-power of human beings represents as important or more important a resource to our country in our efforts to improve productivity as does technology (Harman 1979). Workers in both the public and private sector are a virtually untapped source of natural ingenuity and enthusiasm—which at present are being mostly ignored or wasted. The real success of the American free enterprise system may lie in our ability to tap these resources, and one effective way to do that is to give workers at all levels the opportunity to participate in decisions made on the shop floor, in the office, in the hospital, or wherever. Our companies need to find ways to extend more democratic principles to all levels of workers in order to free worker ingenuity and enthusiasm, and to capitalize on employees' ability to contribute directly to the productivity of the company (Moore and Moore 1981; Noll and Oberwise 1982).

Increasing worker participation in work-related decisions (i.e., democracy in the work place) is a new thrust that may have many positive results, such as (1) improving American business and industry's opportunities to be more competitive in foreign markets; (2) preserving jobs; (3) contributing to the economic stability of the United States; (4) meeting employees' expectations for higher level participation; (5) stimulating and making better use of the higher educational attainment of employees; and (6) making better use of the increasingly complex technologies coming into offices and factories, by enabling employees to interact and participate more effectively in using the technologies. These outcomes are especially critical, because employees at all levels are in day-to-day contact with the processes and procedures that ultimately determine the quality and quantity of the goods and services they produce. Given the chance to feel a sense of "ownership" of their labor and a voice in their work lives, employees are motivated to watch for and correct situations where improvement is needed or resources are being wasted (Simper 1981).

Research has documented the success of employee participation as a management technique (Katzell and Yankelovich 1975). Employee participation in companies in Norway, Sweden, France, the Netherlands, West Germany, and the United Kingdom has resulted in remarkable advances in productivity and in quality of work life, over more traditional practices (Rosow 1974). Comparative studies between the United States and Japan repeatedly attest to the strengths of employee participation over traditional management practices (Pascale and Althos 1981).

In this country, companies such as Proctor and Gamble, Herman Miller, General Motors, IBM, 3M, Polaroid, Hewlett-Packard, Midland-Ross, Xerox, and others have incorporated elements of employee participation into their management practices, and the results have been very positive (Dowling 1978; Moore and Moore 1980; "New Industrial Relations" 1981; Ouchi 1981). The trend is clear. Differences in culture do not change the outcomes. American companies, like foreign companies, can improve both their productivity and the quality of work life for their employees by adopting employee participation as a management technique. And, equally important to us as educators, there is a potential for growth in this area, with the number of persons who will need training and retraining to make effective use of this new management practice counting in the millions (Crosby 1981). The challenge to us in occupational education is enormous and must not be ignored.

**What Employee Participation Is**

Employee participation is a loosely used term that has as many definitions as it has users. In concept, it is a worker involvement in activities that are more traditionally considered to be the responsibility of management, including planning, problem solving, decision making, and self-supervision (Axtell 1981). In this process, employees influence the activities, although management does not give up authority or responsibility for the results. The technique encourages *participation* from workers—not takeover. Employee participation may be no more than encouraging occasional minor suggestions from employees on how to improve productivity in their immediate

work situations. More often, though, the system allows small groups of workers to come together voluntarily to discuss and work on areas of concern, and the groups receive reinforcement, feedback, recognition, and training. Employees involved in these kinds of arrangements often receive hourly feedback on how production and quality are doing. They report to top management at least twice a year on their efforts, and receive a great deal of recognition for their achievements. They also frequently participate in some kind of profit sharing, are guaranteed job security, become involved in developing strategies to retain other employees during hard times, and become involved in work simplification and job redesign studies.

### Expected Outcomes

A large base of theoretical research and actual case studies show that employee participation is a viable management practice. Some of the positive outcomes include reductions in: scrap and waste, work that must be redone, overtime, absenteeism, dissatisfaction, and the number of grievances filed by employees. Also, efficiency in the work process generally improves, along with worker satisfaction.

Employee participation practices take many forms. The most common form is the use of group and teamwork arrangements that aim to increase human productivity and the QWL. General Motors calls its employee participation program the Employee Participation Groups; Ford Motor Company calls its effort Employee Involvement; Control Data uses the term Involvement Teams. Other terms include: worker participation groups, quality circles, problem-solving meetings, teams, zero defect groups, improvement groups, quasi-industrial engineering teams, involvement, performance circles, study groups, the Scanlon Plan, gains sharing, delegative management, individual involvement, safety teams, productivity improvement teams, and bottom-up management. Herzberg, Mausner, and Synderman (1959), some of the first theorists to deal with worker participation principles, called the concept democratic participation.

Training is essential for effective use of employee participation practices, and a commitment to this training as a part of American worklife must be made by B/I and by our community and technical colleges. In Japan, the average worker can expect over 500 days of training in his or her first ten years of employment (Ouchi 1981). We in America must offer similar commitments to revitalizing our work force and our economy.

### General Training Needs for Employee Participation

Research done by the International Association of Quality Circles has shown that a critical need exists for training at all levels in companies implementing employee participation as a management practice (Vaughn and Whelan 1981). Surprisingly little attention has been given to the kinds of training needed. Employees, first-line supervisors, and managers in these work places need thorough orientations to the new management practices and philosophies, technical and quasi-scientific training related to their job content, management skills needed to perform and improve their jobs, measurement skills for assessing the quality and quantity of their work, and broad skills both in communication and in group interaction (Landen 1981).

## Employee Participation Training Needs

### Employee Orientation Training Needs

Employee participation should begin by creating a high level of awareness on the part of all persons involved, to enable them to understand the philosophy, principles, techniques, and purposes of employee participation. In effect, they need to know what employee participation is, how it works, and how it will benefit both the company and themselves (Axtell 1981; Reiker 1981; Sagarin 1981). As in orientation to job redesign, workers will want to know why the company is doing something different than before, how this fits into the goals of the company, how the company is demonstrating its commitment to the new practice, and where and what problems might be expected. Orientation should also give workers a chance to hear about the kinds of additional training they will receive, and offer them the opportunity to express and defuse their fears about the new system.

### Employee Technical and Scientific Training Needs

In employee participation practices, employees may be given added responsibilities for cost reduction, as well as for other aspects of their jobs for which they are not traditionally responsible. Because of this, workers will find many situations where they will need a higher level of skill and knowledge about the operation and maintenance of the tools and processes they use, as well as a better understanding of the standards related to the efficiency and productivity of their jobs (Fukuda 1981; Simper 1981).

Training workers to reduce loss or waste and to recognize potential causes of loss or waste may be especially critical (Simper 1981).

Workers may also need business skills, such as those needed in planning, organizing, problem solving, scheduling, ordering, goal setting, using resources, budgeting, and managing projects (ibid.). They may need to learn skills in self-supervision, and they should gain an understanding not only of how their jobs are done, but also how their jobs relate to other jobs in the company (Crosby 1981).

Employee participation as a management practice places great attention on training employees to help improve both the quality and quantity of production. Some of the most important training needs will be in measuring techniques vital to quality and quantity control, such as—

- brainstorming;
- gathering data;
- Pareto analysis;
- cause and effect diagramming;
- central tendency analysis;
- frequency distribution analysis;
- use of histograms, cross tabulation, scattergrams, and other charts and graphs;
- management presentation;
- stratification;
- $\bar{X}$-R control charts.

Problem-solving and decision-making process training may also be needed (Fukuda 1981; Reiker 1981; Wright Patterson 1982), along with training in work simplification and job timing.

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**Employee participation puts great emphasis on training employees to help improve both the quality and quantity of production.**

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### Employee Communications Training Needs

According to studies performed by the International Association of Quality Circles (Vaughn and Whelan 1981) and by Wayne Reiker (1981), who is considered to be the father of employee participation groups in America, there is a critical need to develop the effective communications skills of workers involved in employee participation. Training may be needed in interpersonal relationships because of the increased interactions between workers in these situations (Dilliard 1982; Simper 1981). Additional or remedial training in language, reading, writing, and oral presentation may also be necessary for some workers (*Course Information, QMT 082* 1982; Sagarin 1981; Vaughn and Whelan 1981), as well as training in creative thinking and in problem-solving skills.

### Employee Group Process Skills Training Needs

A collection of capable people does not always produce an effective employee participation group or team. Training is needed to bring out the best in people cooperating in these efforts (Lippitt 1969; Vaughn and Whelan 1981). Different employees will need varying degrees of training in team building (Francis and Young 1979) and in group dynamics (Reiker 1981), as well as in presenting ideas to other groups and other organizational levels, brainstorming, choosing the right problem to work on, problem solving, resolving conflict, and communicating both verbally and nonverbally (Moore and Moore 1981; Reiker 1981; Vaughn and Whelan 1981). They may also need training in running effective meetings, developing agendas, and in understanding and using the mechanics of meetings (*Course* 1981).

### Supervisor Orientation Training Needs

The success or failure of employee participation may hinge on the ability and enthusiasm of first-line supervisors in implementing the new management technique. Supervisors will therefore need a more comprehensive understanding of the dynamics of the technique than will the workers. Orientation training sessions should be tailored to the needs dictated by supervisors' key leadership roles. (See Employee Participation Training Needs for additional training needs in orientation as well as in other areas; supervisors will need to acquire the same knowledge and skills in employee participation as do the workers they supervise, as well as some additional skills needed to help facilitate the participation efforts.)

### Supervisor Technical and Scientific Training Needs

Supervisors will also need a detailed background in the theory and practice of employee participation —that is, they will need to know how these theories are applied to the management of people, and specifically how to perform employee participation interventions. In addition to their traditional super-

visory skills, first-line supervisors in these new work situations will need training in how to apply new leadership styles. They will need to know how to (1) train employees in their new responsibilities; (2) counsel employees about both work-related problems and career opportunities within the company; (3) help subordinates set performance goals; (4) review with employees their performance in attaining the goals; (5) provide increased openness of communications both upward and downward in the organization; (6) develop and test with subordinates the innovations and methods for executing and coordinating the work; (7) work with such aspects of the work context as compensation, control systems, opportunity structures, equipment, and space; and (8) manage the evolution of the employee participation process itself.

First-line supervisors will need a higher level of skills and knowledge in some operations, as well as a thorough understanding of the whole, in order to be helpful to their subordinates. Supervisors will also need skills in sharing their authority with group participation leaders, and will need to know how to recognize, consult with, and be receptive to the leaders of the group (Dowling 1978). Supervisors will have to know how to coach, how to serve as resource persons, and how to reinforce workers (Axtell 1981; Simper 1981).

**Supervisor General Communications Training Needs**

First-line supervisors will need the same kinds of general communications skills that workers will need in the new system, but the supervisors may need higher levels of the skills because of the increased responsibility and leadership of their jobs. Skill in giving and receiving feedback and reinforcement will be essential, not only for greater interaction with subordinates, but also with the levels above the supervisors.

**Supervisor Group Process Skills Training Needs**

Supervisors will need higher levels of skill because of their new roles. (See Employee Participation Training Needs for a detailed listing.)

**Lower Level Mid-Management Orientation Training Needs**

Managers at the lower level are the people to whom first-line supervisors generally report. Like the supervisors, these managers will need specific training in all aspects of employee participation so they can effectively help their first-line supervisors get the new system started, and so they are able to implement the needed changes in their own levels of management.

**Lower Level Mid-Management Technical and Scientific Training Needs**

Unlike first-line supervisors, most managers at the lower level will not need training in machines, processes, and other operations, or in the kinds of basic supervisory skills the first-line supervisors must have. The lower level managers will need a greater depth of understanding in management principles, however, since employee participation on their own level may give them greater management responsibilities than they had under the traditional management structure. The use of specific training in cause and effect diagrams, and so forth, may not need to be as extensive for the managers as for first-line supervisors, since the managers will not be involved directly in many of the worker-level decisions and changes made through the employee participation system.

**Lower Level Mid-Management General Communications Training Needs**

Presumably, persons in lower level mid-management positions will not need training or remediation in basic language skills and the like. Their communications skills needs will be essentially the same as those needed by supervisors.

**Lower Level Mid-Management Group Process Skills Training Needs**

These managers' needs in this area are essentially the same as those needed by supervisors.

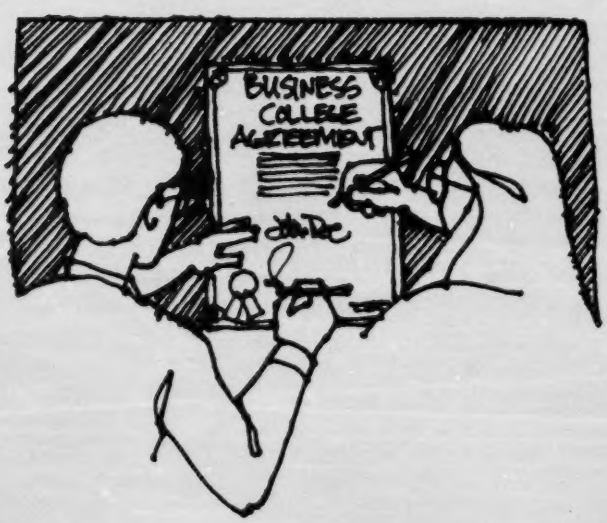
## What Schools Must Do to Work Cooperatively with Business and Industry

*Business Week* recently estimated that 45 million jobs will be affected by the new efforts to improve human productivity and the quality of work life (Bottoms 1981). In Japan, over 12 million workers are already involved in employee participation groups. Our failure to reindustrialize (or our doing so too slowly) has enormous implications for our economy, as well as for our social and political systems and our national security. Leaders in politics, business, economics, the military, and sociology all agree that a speedy recovery from lagging productivity is a must for our nation. As we have seen, the training needed to help with reindustrialization and

productivity—through such techniques as job redesign and employee participation—is well within the capacity and the mission of postsecondary occupational education.

There is widespread agreement by educators, representatives of business and industry, government officials, staff of professional associations, and other observers of our economic scene that closer collaboration between education and B/I is essential to providing the training needed for economic recovery (Carnevale 1981; Craig 1981; Evans 1981; Hopkins 1982; Quie 1981; Wilson 1981; Wolfbein 1981). But to work cooperatively with B/I in retraining the American adult work force in the new management techniques, community and technical colleges will need to rethink their strategies (Bottoms 1981). Occupational education will need to be presented as much more than training for initial job entry (Hopkins 1982). We will need to make a joint effort with business and industry to reshape our mentalities to fit the new future we must create for our work organizations, our workers, and our colleges (Arai 1981).

The members of a national telephone committee (see Appendix A) have suggested that we, the decision makers in postsecondary occupational education, need not only to be more aware of the need and significance of a more direct, involved role in adult retraining and upgrading for improved productivity, but we also need to appreciate and move on the urgency of the situation. Committee members used such terms as "riding a new horse," or "using new wine skins," to express the significance of the change that must develop in our thinking. We must see our new role in economic development clearly, and must understand how the concept of human resource development, as a capital investment, is in our hands for shaping into a positive force in our nation's productivity and quality of work life. We must see what can be, and how we might work to making that brighter future come true (Proxmire 1981).




#### Administrative Changes Needed

New administrative procedures will be the first order, so that funds can be quickly accessed for program development, so that program quality can be controlled, and so that accreditation standards are met and maintained (Paulsen 1981). The "red tape" of designing and customizing training programs must be reduced, so that colleges can offer "fast response" programs, as well as technical assistance to companies. Administrative procedures will be needed to streamline program development and delivery, especially through the use of modern communications technologies, up-to-date equipment, and close liaison with business and industry (National Association of State Directors of Vocational Education 1982). Administration should additionally look into more efficient and effective ways to find and update training staff.

**Community and technical need to initiate "fast response"**

#### Content Strategies

We will need to develop content strategies to ensure that funds will be available for curriculum development, and that creative approaches to scheduling instruction will be used in order to meet the diverse needs of adult learners. Training should be developed and delivered using interdisciplinary approaches. To customize a training program for a specific company's needs, a college may need to bring in content specialists in communications, mathematics, reading, psychology, business, and management/supervision, as well as utilize staff with expertise in the scientific/technical processes, procedures, standards, equipment operations and maintenance, and related job content.

Fostering collaboration with B/I in developing and customizing programs will be an important activity, and we will have to learn to listen closely and work with B/I (Parnell 1982). Ways we can do this effectively include (1) conducting forums to discuss and work out the implications of the emerging needs for retraining (Bottoms 1981); (2) developing workshops involving local members of groups

such as the American Association of Community and Junior Colleges, American Society for Training and Development, and the American Vocational Association; (3) setting up productivity/QWL centers on each campus to facilitate the transfer of knowledge, the dissemination of research, and training; (4) assigning fulltime staff to positions in the productivity/QWL centers; and (5) having the college presidents make at least one call each week to collaborating companies (Sorenson 1982). In this way, colleges should be able to get a better handle on what B/I wants and needs, and what price B/I is willing to pay for upgrading and retraining (Paulsen 1981). Finally, we will need to gain the aid and commitment of legislators in promoting the concept of our new role in economic recovery (National Association 1982), and to convince B/I sectors of our ability to understand their needs and deliver quality service.

### Barriers to Closer Cooperation

Interviews with trainers, B/I consultants in productivity and QWL, and staff in both public and private productivity/QWL centers have revealed that publicly supported occupational education has not established itself as a source for upgrading and retraining for economic revitalization. Thomas Miller, vice president of Control Data, put it this way: "It's hard for business and industry to see schools as leaders when schools don't use the management practices themselves to improve productivity and QWL, and they lack the modern technology" (Miller 1982). People in B/I feel that we in postsecondary occupational education lack the understanding that these concepts require. As a result, they are reluctant to look to us as a resource to retrain their workers.

There are many barriers that prevent our community and technical colleges from delivering the upgrading and retraining that B/I needs for its adult employees. These barriers include—

- the extent to which the colleges are already overburdened with traditional day and evening in-school programs (Evans 1981),
- the isolation of the colleges from the scientific and engineering communities (ibid.),
- the restriction of time available to deliver training (ibid.),
- the need for teaching staff to upgrade their own skills (ibid.),
- the lack of responsibility for training and retraining assigned to the colleges, whether by local, state, or federal governments (Arai 1981),
- the extent to which program content is out of date (Bottoms 1981),
- the lack of funding from outside the district for such efforts, and the penalties in terms of statewide funding formulas for running noncredit short-term training (Lynton 1981),
- inflexible curriculum and course hours (ibid.),
- cumbersome bureaucratic procedures (ibid.),
- an arrogant attitude on the part of educators, as viewed by some B/I persons (ibid.),
- the academic world's difficulty in translating theory into applied knowledge (ibid.),
- lengthy approval processes before programs can begin (ibid.),
- inflexible admission and registration procedures (ibid.),
- lack of adaptability in time, place, and format of training (ibid.),
- inflexible use of facilities (ibid.).

This list of barriers should also include the repeated concern of B/I sectors for what they feel is the colleges' inability to understand their training needs, and the apparent failure of colleges to make a real commitment—backed by action, not merely by rhetoric—to providing this kind of training for adult workers. Some business and industry persons feel that educators speak a different language and have a different culture, and never the twain shall meet. These are barriers that must be overcome for any collaborative efforts between education and B/I to succeed, and the responsibility for overcoming them rests mainly with us, the educators.

### Strategies to Build Partnerships

Overcoming the barriers to closer collaboration between colleges and B/I will first require us to identify our role and responsibilities in working with

business and industry to retrain and upgrade the working adult population for improving human productivity and the quality of work life. We must seek the best ways by which we can work together toward our common goals. We will need to convince government leaders of our crucial role in our nation's economic revitalization.

### Federal Strategies

A major need is for enabling legislation that provides federal funding for studies, program development, pilot projects, program implementation, evaluation, dissemination, and national and state leadership development. The call is out for a national employment policy, too. National groups, such as the American Association of Community and Junior Colleges, will need to work even more closely with others interested in economic recovery in order to develop national policies related to the role of adult training in community and technical colleges.

### State Strategies

State governments must also be convinced to recognize the important role of closer collaboration between education and B/I. State legislation is needed to allocate funding for state-level leadership, coordination, program development, pilot projects, evaluation, and dissemination. State assistance can add significantly to the development of closer collaborative arrangements that will benefit all parties. States that have already taken active roles have shown impressive economic gains. Such states as Florida, North Carolina, South Carolina, and Oklahoma have repeatedly demonstrated what can happen when a state includes upgrading and retraining as a top priority in a statewide economic development program (Jackman and Mahoney 1982).

### Local Strategies

Local strategies are mostly the responsibility of the community or technical colleges, and they mainly involve colleges' getting out into the field and knocking on the doors of local business and industry to get a clearer understanding of the situation. Colleges need to find out what the local productivity problems are, and what the local businesses and industries are (or are not) doing to improve the situation. These meetings or visits are also crucial opportunities to let the companies know that our colleges want to help and that we are ready to try.

Company representatives and college presidents must begin talking to each other and establishing long-term relationships. With the participation of both parties, we need to develop systems for ongoing needs assessments, a track record of successful collaborations, and a portfolio of successful, customized training programs. We must learn to practice what we preach by adopting the new management practices and technologies, and by doing a better job of retraining and upgrading our own staffs.

We should review our existing curricula to determine how some of the traditional materials can be used or modified for customized B/I training programs. We will need to make greater use of industrial people as key resources in developing new course content for use in industry (Hiegel 1982). We must stop using our advisory committees as figureheads or rubber stamps, and begin following their advice more closely. We will need to reduce or eliminate the cumbersome bureaucratic processes that slow down program design and approval, and staff scheduling and assignment. Our traditional instructors should be trained with new skills in customizing instructional materials, and we should be willing to make greater use of B/I personnel as instructors in highly technical areas. Instructors from industry may need training in effective teaching techniques for adult learners. Staff exchanges between B/I and colleges will be needed more than ever.

### Funding Strategies and Problems

From a B/I perspective, it is vital that funding from federal, state, or local sources for training delivered by community and technical colleges have minimal rules, regulations, and paperwork attached. Business people who were interviewed for this concept paper expressed a cautious attitude about governmental funding and its usual bureaucratic red tape. Some questioned whether such funding was essential, and felt that local funding between the colleges and B/I was preferable. Unfortunately, most college resources are already tight, and some college presidents felt that having state and local funds available would be critical. The challenge will be to secure resources from numerous funding agencies, with minimal restrictions or bureaucratic distractions.

## Conclusions

If productivity is the problem from which most of our national economic woes come, then public occupational education in collaboration with business and industry for employee retraining and upgrading is a crucial part of the solution. Understanding the interrelationships of productivity, economics, and the investment in human capital lets us "catch a new

vision." It shows us how investing in the minds and abilities of our nation's work force can improve Americans' productivity and the quality of work life, which in turn strengthens our economy by reducing inflation and unemployment, improving our standard of living, and improving our companies' ability to compete in international markets. Our "new vision" can help us see what currently exists in a new light, and can help us create a more positive image of—and goal for—what we would like in the future.

This paper is an effort to help us see more clearly where we need to go with our educational and economic policies and practices, why we must move in those directions, and what elements will be part of that journey. We hope we have helped by reviewing key interrelationships, identifying specific training needs, uncovering barriers to closer collaborations, and offering strategies for building more effective partnerships to attain our mutual goals.

# Appendix A
# National Telephone Reactors

## NATIONAL TELEPHONE REACTORS

**American Association of Community and Junior Colleges**
Richard Wilson, Vice-President, Governmental Relations

Donald Garrison
President
Tri-County Technical College
Highway 76, Box 86
Pendleton, SC 29670

Donald Smith
Executive Director
Dawson Skill Center
3901 S. State Street
Chicago, IL 60609

Andrew Korim
Dean of Grants
Community College of Allegheny County
610 Smithfield Street
Pittsburgh, PA 15222

Robert Sorenson
State Director
State Board of VTAE
Hill Farms State Office Building
Seventh Floor
4802 Sheboygan Avenue
Madison, WI 53702

**American Society for Training and Development**
Robert Craig, Director, Governmental Affairs

Richard Ault
Richard Ault Associates
33 North Autumnwood Way
The Woodlands, TX 77024

William Lerch
Pennsylvania Power & Light Co.
Two North Ninth Street
Allentown, PA 18101

George Kuper
Production Resource Staff
General Electric Corporation
Easton Turnpike
Fairfield, CT 06431

Kenneth Rifkin
AT&T
1776 on the Green
Room 10B28
Morristown, NJ 07960

**American Vocational Association**
Gene Bottoms, Executive Director

Charles Dygert
Director of Economic Development
State Department of Vocational Education
Ohio Department Building
65 South Front Street
Columbus, OH 43215

Francis Tuttle
State Director
State Department of Vocational and
Technical Education
1515 West Sixth Avenue
Stillwater, OK 74074

George Mehallis
Director of Technical Education
Broward College
225 E. Las Olas Boulevard
Fort Lauderdale, FL 33301

Charles Whitehead
President
State Technical Institute
5983 Macon Cove
Memphis, TN 38134

# Appendix B
## National Committee

## NATIONAL COMMITTEE

**American Association of Community and Junior Colleges**
Richard Wilson

Richard Wilson
Vice-president for Governmental Relations
American Association of Community
and Junior Colleges
Suite 410
One Dupont Circle, N.W.
Washington, DC 20036

James Mahoney
Project Director
Energy Communications Center
American Association of Community
and Junior Colleges
Suite 410
One Dupont Circle, N.W.
Washington, DC 20036

Barbara E. Macht
Coordinator of Off-Campus Programs
Hagerstown Junior College
751 Robinwood Drive
Hagerstown, MD 21740

Michael Parsons
Dean of Instruction
Hagerstown Junior College
751 Robinwood Drive
Hagerstown, MD 21740

**American Society for Training and Development**
Robert Craig

Robert Craig
Director of Government and Public Affairs
American Society for Training and Development
Suite 305
600 Maryland Avenue, S.W.
Washington, DC 20024

Michael Dymmel
Assistant Director of National Training Fund
Communications Workers of America
1925 K Street, N.W.
Washington, DC 20006

Ralph Christiansen
Manager of Organization Development
Martin Marietta Corporation
6801 Rockledge Drive
Bethesda, MD 20034

Forrest Gale
Deputy Director of Productivity Management Office
Headquarters
Chief of Naval Materials
Room 607
Crystal Plaza No. 5
Washington, DC 20360

**American Vocational Association**
Gene Bottoms

Gene Bottoms
Executive Director
American Vocational Association
2020 North 14th Street
Arlington, VA 22201

Krishan Paul
Director of Economic Project
American Vocational Association
2020 North 14th Street
Arlington, VA 22201

John Bonfadini
Associate Professor Education
George Mason University
4400 University Drive
Fairfax, VA 22030

Joseph Horowitz
Chairman, Engineering Technologies
Northern Virginia Community College
8333 Little River Turnpike
Annandale, VA 22003

**National Center for Research in Vocational Education**
Robert E. Taylor, Executive Director

Kenneth Huddleston
National Fellow, Advanced Study Center
National Center for Research in
Vocational Education
The Ohio State University
Columbus, OH 43210

Arthur Lee
Liaison
National Center for Research in
Vocational Education
The Ohio State University
Columbus, OH 43210

# Appendix C
# Resource Persons and Conferences

## RESOURCE PERSONS AND CONFERENCES

Resource persons utilized in developing this paper but who are not acknowledged elsewhere are listed below.

**Personal Interviews and Visitations**

Dr. Arch Alexander
Deputy Director
State Department of Vocational Education
Stillwater, OK

Mr. Joji Arai
Manager
Japan Productivity Center
Washington, DC

Mr. James Auerbach
Representative
Department of Education
AFL/CIO
Washington, DC

Dr. Maurice Buckner
Dean of Continuing Education
Brevard Community College
Cocoa, FL

Ms. Jacqueline Cody
Training Chief
Tinker Air Force Base
Oklahoma City, OK

Frank Darling
On-Site Coordinator at Rockwell International
Department of Economic and Community Development
State of Ohio
Columbus, OH

Dr. Dorothy Fenwick
Project Director
American Council on Education
Washington, DC

Ms. Margery Finnin
Aide to U.S. Congressman Thomas Petri
Washington, DC

Ms. Peggy Gordon
Manager
Productivity Center, Logistics Command
Wright Patterson Air Force Base
Dayton, OH

Mr. Thomas Hiegel
Supervisor of Education and Training
General Motors Corporation
Dayton, OH

Major Russell Lloyd
Air Force Institute of Technology
Wright Patterson Air Force Base
Dayton, OH

Dr. Otto Lockee
Vice President of Continuing Education
Piedmont Community College
Charlotte, NC

Mr. Paul Moniner
Plant Manager
National Can Company
Oklahoma City, OK

Dr. Raymond Parrott
Executive Secretary
National Advisory Council on Vocational Education
Washington, DC

Congressman Thomas Petri
U.S. Representative, Wisconsin
Washington, DC

Senator William Proxmire
U.S. Senator, Wisconsin
Washington, DC

Ms. Barbara Pruwitt
Management Development
Maintenance, Logistics Command
Wright Patterson Air Force Base
Dayton, OH

Mr. Earle Rochester
Industrial Services
Tri-County Technical College
Pendleton, SC

Mr. Michael Usdan
President
Institute for Educational Leadership
Washington, DC

Dr. Robert Worthington
Assistant Secretary for Vocational and Adult Education
U.S. Department of Education
Washington, DC

Dr. Roger Yarrington
Vice President
American Association for Community and Junior Colleges
Washington, DC

**Telephone Interviews**

Mr. Anthony Carnevale
Consulting Economist
American Society for Training and Development
Washington, DC

Dr. Edward Denison
Associate Director
Bureau of Economic Analysis
U.S. Department of Commerce
Washington, DC

Dr. Keith E. McKee
Director
Manufacturing Productivity Center
Illinois Institute of Technology
City, State

Mr. Ted Mills
Director
American Center for the Quality of Work Life
Washington, DC

Dr. James Taylor
Research Fellow
Center for Quality of Working Life
University of California
Los Angeles, CA

**Conferences Attended**

"National Conference on Fostering Economic Development and Productivity through an Investment in Human Resource Development"
May 24-26, 1982
Columbus, OH

"Opportunity with Excellence"
American Association of Community and Junior Colleges
April 4-7, 1982
St. Louis, MO

"Productivity the American Way"
November 2-4, 1981
New York, NY

"Shaping the Future through Human Productivity"
American Society for Training and Development
National Conference
May 16-20, 1982
San Antonio, TX

"The Social Impact of Advanced Technology"
International Symposium
May 10-14, 1982
Columbus, OH

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Yarrington, Roger. Personal interview, October 1981.